WHAT IS CLAIMED:

1. A method of preparing a graphite intercalation compound comprising:

providing graphite particles;

immersing the graphite particles in an aqueous electrolyte media comprising an acid and an oxidizing agent;

subjecting the immersed graphite particles to an anodic current;

removing the graphite particles from the electrolyte and rinsing the graphite particles with a solvent; and

removing the excess electrolyte and solvent from the graphite particles.

2. The method of Claim 1 wherein the electrolyte comprises H_2SO_4 for the acid and HNO_3 for the oxidizing agent.

3. The method of Claim 2 wherein the electrolyte comprises between approximately 99 Vol.% and 50 Vol.% of 66 Wt.% H_2SO_4 and between approximately 1 Vol.% and 50 Vol.% of 40 Wt.% HNO_3.

4. The method of Claim 1 or Claim 3 wherein the density of the current to which the immersed graphite particles are subjected is between approximately 0.1 mA and 5A per gram of graphite.

5. The method of Claim 4 wherein the immersed graphite particles are subjected to the anodic current for between approximately 1 minute and 180 minutes.

6. The method of Claim 3 or 5 wherein the solvent is distilled water.

7. The method of Claim 3 or 5 wherein the solvent is deionized water.

8. The method of Claim 1 wherein the acid is H_2SO_4 and the oxidizing agent is selected from the group consisting of HNO_3, CrO_3, $KMnO_4$, $(NH_4)_2SO_4$, PbO_2, MnO_2, MnO, H_2O_2 and $HClO_4$.

9. A method of preparing a graphite intercalation compound comprising:

providing graphite particles;

immersing the graphite particles in an aqueous electrolyte media of between about 90 vol.% and 75 Vol.% of 66 Wt.% H_2SO_4 and between about 10 Vol.% and 25 Vol.% of 40 Wt.% HNO_3;

subjecting the immersed graphite particles to a current of approximately 1mA per gram of graphite for between approximately 1 to 60 minutes;

rinsing the graphite particles in water for approximately 1 minute; and

drying the graphite particles.

10. The method of Claim 9 wherein the water is distilled.

11. The method of Claim 9 wherein the water is deionized.

12. The method of Claim 9 wherein the graphite particles are dried in a vacuum drier.

13. The method of Claim 9 wherein the graphite particles are dried in a filter press.

14. The method of Claim 9 wherein the graphite particles are dried in a centrifuge.

15. The method of Claims 1 or 9 further comprising providing a plating barrel, placing the graphite particles in the plating barrel prior to immersion in the electrolyte, and rotating the plating barrel while the graphite particles are subjected to the current.

16. The method of Claim 15 wherein the plating barrel is a wall plating barrel with a +50 mesh opening wall.

17. An intercalated graphite having an expansion volume of from between about 100 ml/g to 500 ml/g when subjected to rapid heating of approximately 1000°C.

18. An intercalated graphite having an expansion volume of from between about 500 ml/g to 2000 ml/g when subjected to rapid heating at approximately 1000°C for from approximately 1 second to 10 minutes.

19. The method of Claims 1 or 9 wherein the graphite particles are selected from the group consisting of natural, synthetic, vein, and amorphous graphites, all having a purity of between about 80% and 99.9% LOI.

SUBSTITUTE SHEET